Subnational Actions for the Regeneration of Landscapes: Assessment of impacts with ICAT guidance

Basic information

Classification of policy: Nationally Appropriate Mitigation Action (NAMA)

Title: Subnational Actions for the Regeneration of Landscapes

Country: Mexico

Basic information

States: Querétaro, Aguascalientes, Baja California, Chiapas, Chihuahua, Coahuila, Jalisco, Nuevo León, Quintana Roo, San Luis Potosí, Sonora, Veracruz (12 states)

Coordinating organization: Grupo Ecológico Sierra Gorda, I.A.P. (GESG)

Start dates

Forest regeneration pilot activities begun in 2014 in state of Querétaro

Planned grazing pilot activities begun in 2015 as part of project of Multilateral Investment Fund of Inter-American Development Bank

Registration of the NAMA

National NAMA Registry: 2015

UNFCCC NAMA Registry: 2018

Components of the NAMA

- State funding mechanisms
- Subnational actions for regeneration of forests
- Subnational actions for planned grazing

Components of the NAMA

- Orientation of public policies and programs

- Awareness campaigns

Initiative for Climate Action Transparency

Objectives: Provide policymakers around the world with tools and support to assess the impacts of their climate policies and actions, to further transparent and ambitious climate action.

Two components:

- ICAT series of guidance
- Country support to build capacity

Multi-stakeholder partnership

DONORS

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety

CIFF CHILDREN'S INVESTMENT FUND FOUNDATION

MINISTERO DELL'AMBIENTE E DELLA TUTELA DEL TERRITORIO E DEL MARE

ClimateWorks

GRANT MANAGEMENT

UNOPS

IMPLEMENTATION PARTNERS

UNEP DTU PARTNERSHIP

VERRA

WORLD RESOURCES INSTITUTE

SUPPORTING PARTNERS

Rainforest Alliance

CCBA The Climate, Community & Biodiversity Alliance

NEW CLIMATE INSTITUTE

INFRAS

ghg management institute

CDP DRIVING SUSTAINABLE ECONOMIES

THE CLIMATE GROUP

Piloting of ICAT guidance documents

- Technical and financial support of ICAT
- Preparation of three assessment reports
- Technical review of assessment reports

Piloting of ICAT guidance documents

- Feedback reports for ICAT
- Short examples/case studies for potential inclusion in next version of guidance documents
- Presentation for use in communications and events

Guidance documents applied:
-- Introductory Guide --

Impact Assessment Guidance

Greenhouse gas impacts:

- Agriculture
- Forestry

- Transformational Change

Supporting Guidance

- Non-State and Subnational Action
- Technical Review

Assessment reports

- Assessment of GHG impacts of subnational actions for the regeneration of forests
- Assessment of GHG impacts of subnational actions for the implementation of planned grazing
- Assessment of potential for transformational change

Assessment reports

- Prepared by GESG
- Key recommendations approach
- Prepared in Spanish
- Review of advances during calls with ICAT partners who participated in development of guidance documents

Forest and Agriculture Guidance

- Recommendations for the quantification and reporting of GHG impacts of policies and actions
- Utilize “2006 IPCC Guidelines for National GHG Inventories”
- Applicable for estimating baseline and policy scenario emissions

Forest and Agriculture Guidance

- Ex-ante and ex-post
- Flexible

Report 1: Assessment of GHG impacts of subnational actions for the implementation of planned grazing

Assessment periods

- 2016-2018 ex-post
- 2019-2040 ex-ante

GHG impacts evaluated

- Soil carbon sequestration
- Enteric fermentation emissions

Assessment of GHG impacts

- Emissions approach: Compared the difference in GHG emissions and removals between the policy scenario and baseline scenario. The difference between policy and baseline scenario emissions and removals is the net change in GHG impact resulting from the policy.

- Methods of ICAT to determine likely implementation level, 1.1 million hectares

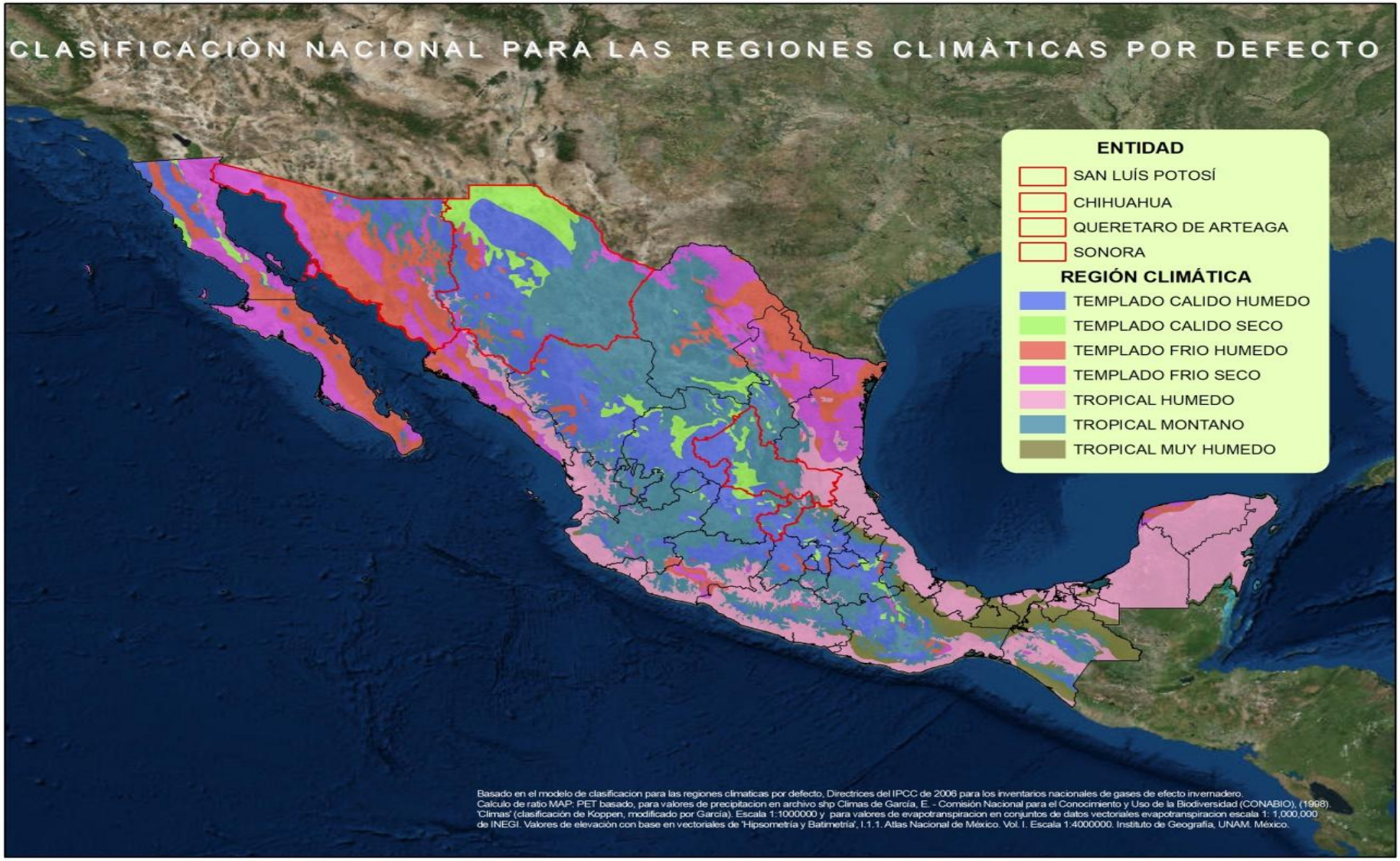
Assessment of GHG impacts

- Tier 1 methods of IPCC 2006

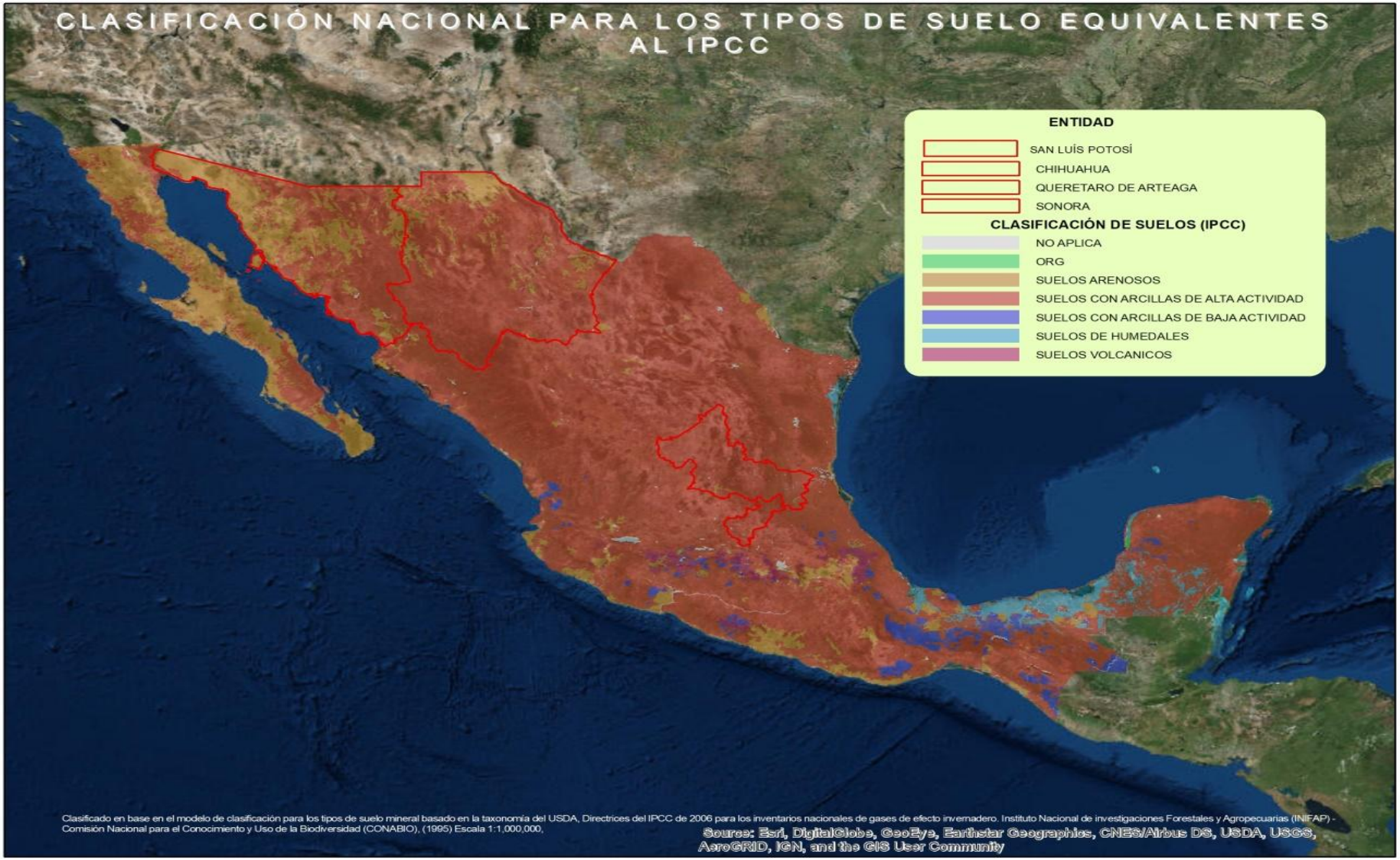
Soil carbon

- Grazing lands remaining grazing lands

- Stratification of grazing lands by climate regions and soil types to determine default reference soil carbon stock



Stratification of grazing lands by climate regions



Stratification of grazing lands by soil types

TABLE 2.3
DEFAULT REFERENCE (UNDER NATIVE VEGETATION) SOIL ORGANIC C STOCKS (SOC_{REF}) FOR MINERAL SOILS (TONNES C HA^{-1} IN 0-30 CM DEPTH)

Climate region	HAC soils[1]	LAC soils[2]	Sandy soils[3]	Spodic soils[4]	Volcanic soils[5]	Wetland soils[6]
Boreal	68	NA	10#	117	20#	146
Cold temperate, dry	50	33	34	NA	20#	87
Cold temperate, moist	95	85	71	115	130	
Warm temperate, dry	38	24	19	NA	70#	88
Warm temperate, moist	88	63	34	NA	80	
Tropical, dry	38	35	31	NA	50#	86
Tropical, moist	65	47	39	NA	70#	
Tropical, wet	44	60	66	NA	130#	
Tropical montane	88*	63*	34*	NA	80*	

IPCC 2006 default reference soil carbon stocks

Soil carbon

- Multiplication by stock change factors to calculate representative soil carbon stocks for each scenario

TABLE 6.2
RELATIVE STOCK CHANGE FACTORS FOR GRASSLAND MANAGEMENT

Factor	Level	Climate regime	IPCC default	Error [1,2]	Definition
Land use (F_{LU})	All	All	1.0	NA	All permanent grassland is assigned a land-use factor of 1.
Management (F_{MG})	Nominally managed (non –degraded)	All	1.0	NA	Represents non-degraded and sustainably managed grassland, but without significant management improvements.
Management (F_{MG})	Moderately degraded grassland	Temperate /Boreal	0.95	± 13%	Represents overgrazed or moderately degraded grassland, with somewhat reduced productivity (relative to the native or nominally managed grassland) and receiving no management inputs.
		Tropical	0.97	± 11%	
		Tropical Montane[3]	0.96	± 40%	
Management (F_{MG})	Severely degraded	All	0.7	± 40%	Implies major long-term loss of productivity and vegetation cover, due to severe mechanical damage to the vegetation and/or severe soil erosion.
Management (F_{MG})	Improved grassland	Temperate /Boreal	1.14	± 11%	Represents grassland which is sustainably managed with moderate grazing pressure and that receive at least one improvement (e.g., fertilization, species improvement, irrigation).
		Tropical	1.17	± 9%	
		Tropical Montane[3]	1.16	± 40%	
Input (applied only to improved grassland) (F_I)	Medium	All	1.0	NA	Applies to improved grassland where no additional management inputs have been used.
Input (applied only to improved grassland) (F_I)	High	All	1.11	± 7%	Applies to improved grassland where one or more additional management inputs/improvements have been used (beyond that is required to be classified as improved grassland).

Soil carbon: baseline

- Baseline scenario considered to be the common practice of continuous unplanned grazing with moderate degradation.

- Assumption that grazing lands have been under this level of management for ≥ 20 years

- Zero carbon capture (constant baseline)

Soil carbon

- Planned grazing as improved management in scenario of the NAMA

- Difference between representative soil carbon stocks in the scenario of the NAMA and in the baseline scenario = total impact

- 20-year transition period

Soil carbon

- Divided total impact by 20 to calculate annual removal factor for each stratum

Enteric fermentation assumptions

- Average of 0.1155 head of cattle per hectare based on expert opinion.

- Annual average increase of 1.3% in baseline scenario based on study of historic trends in the 12 states.

- Increase in herd size of 50% during a period of 10 years in NAMA scenario based on expert opinion.

Enteric fermentation

- Emission factor for other cattle from most recent national GHG emissions inventory (INEGYCEI 1990-2015) of 56 kg of CH_4 $animal^{-1}$ $year^{-1}$

- 100-year global warming potential of CH_4 of 28 from Fifth Assessment Report of IPCC utilized by INEGYCEI 1990-2015

Comparing impact with NDC goals

- Applied Non-State and Subnational Action Guidance to assess overlaps, add impacts and compare ambition

- No overlaps among the 12 subnational actions

- Net GHG impact: -2.9 MtCO2e/year in 2030 from 12 subnational actions

Comparing impact with NDC goals

- No current overlaps with other national actions (to be reviewed in the future to ensure no double-counting)

- Planned grazing identified as a conditional mitigation measure by National Institute of Ecology and Climate Change (INECC) with theoretical potential of carbon capture of 5.6 $MtCO_2e$ for the year 2030

Comparing impact with NDC goals

- 52% of the theoretic potential indicated by INECC for planned grazing and 41% of the unconditional goal for agricultural sector of 7 $MtCO_2e$ in 2030 (INECC, 2017)

- Reorientation of system of government programs, technical support, incentives and financial mechanisms is expected to result in greater impacts.

Report 2: Assessment of GHG impacts of subnational actions for forest regeneration

GHG impacts assessed

- Increase of carbon in live biomass via natural regeneration (trees, roots, understory)

Assessment of GHG impacts

- Activity data method: Activity data (hectares) multiplied by GHG emission/removal factors

- Methods of ICAT to determine likely implementation potential for each state of 18,000 hectares (20,000 hectares minus 10% for risks such as fires, diseases, hurricanes, etc.)

Emission/removal factors

- Local study in Sierra Gorda for oak forest understory, extrapolated for other vegetation types
- Emission factors of national GHG inventory (INEGYCEI 1990-2015) for trees and roots
- Extrapolation of mean annual increments in some cases

Comparing impact with NDC goals

- Net GHG impact: -694,000 tCO_2e/year in 2030 from 12 subnational actions
- 5% of emissions goal of -14 $MtCO_2e$ for 2030 (source of goal: INECC 2017)
- Reorientation of system of government programs, technical support, incentives and financial mechanisms is expected to result in greater impacts.

Report 3: Assessment of transformational change potential

Transformational Change Guidance

Definition of transformational change:

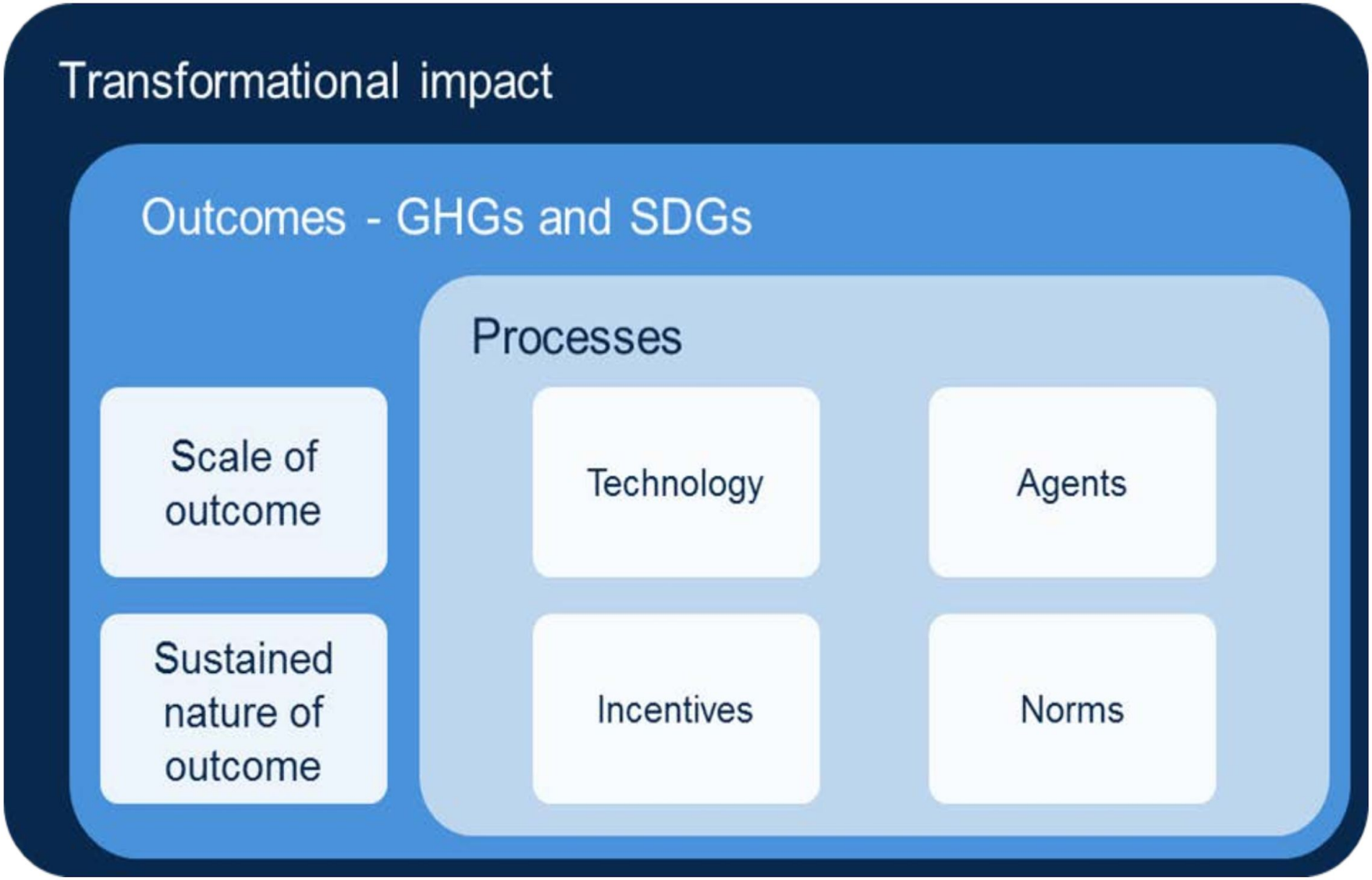
A fundamental, sustained change of a system that disrupts established high-carbon practices and contributes to a zero-carbon society in line with the Paris Agreement goals to limit global warming to 1.5 - 2°C and the UN Sustainable Development Goals.

Transformational Change Guidance

Basic steps:

- Describe the vision for transformational change
- Choose characteristics to be assessed
- Identify barriers
- Evaluate the starting situation
- Evaluate the magnitude and likelihood of transformation
- Monitor performance

Characteristics of transformational change



Sustainable Development

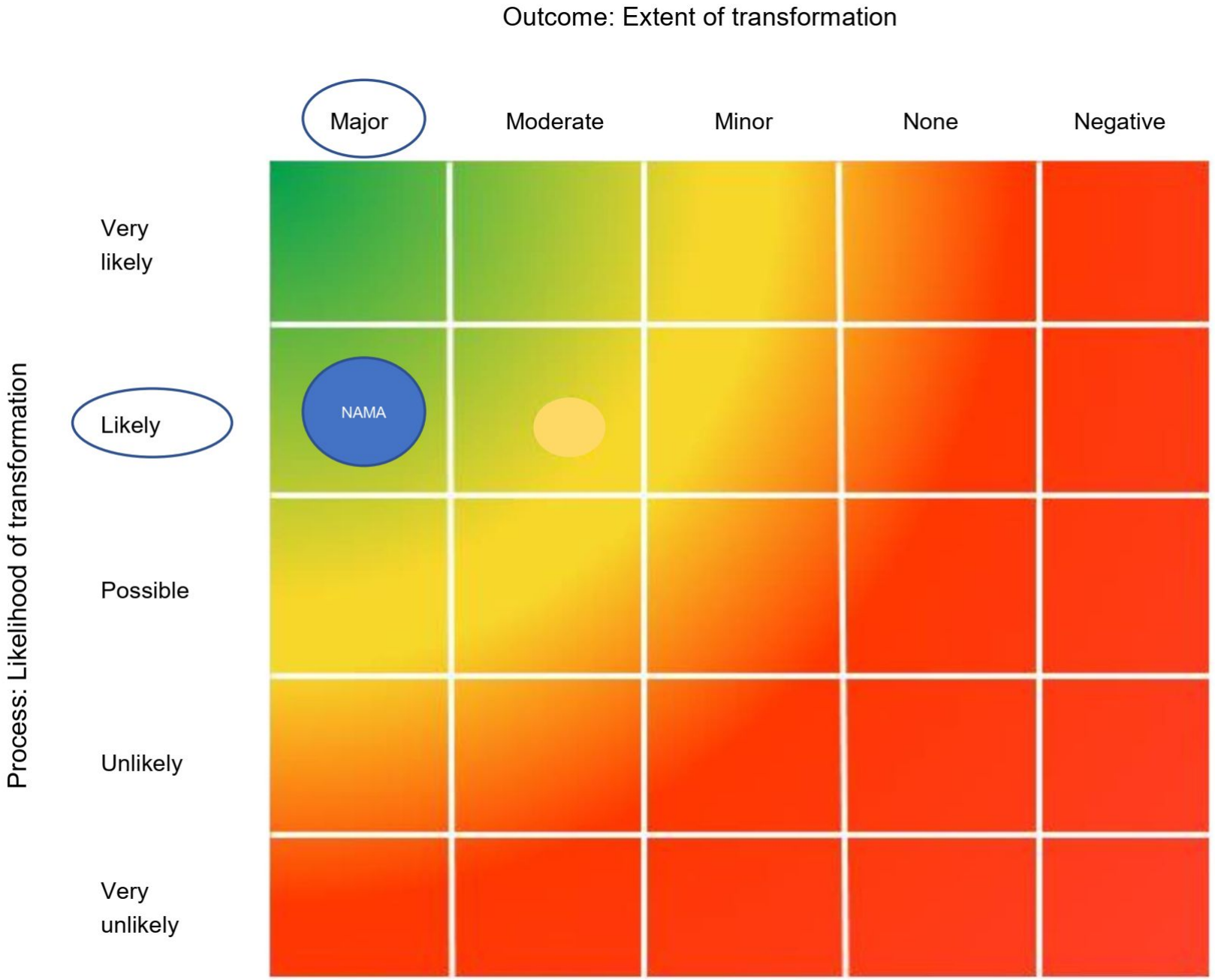
- Evaluation of Social Return on Investment (SROI)

- Investment in subnational actions compared with value of financial, social and environmental returns

Sustainable Development

- Indicators include increased income and value of ecosystem services of carbon capture, hydrological services and biodiversity

Figure 8.1 Transformational impact matrix for the NAMA



Policy design improvements

- Specific objective for the regenerative reorientation of the system of government programs, technical support, incentives and finance mechanisms for the target sectors

- Formation of a critical mass of public officials decision makers, NGOs, educators, technicians and producers committed to regenerative management

Policy design improvements

- Incorporation of a public awareness campaign in key cities

- Integrated landscape management orientation for the NAMA with greater emphasis on intersectoral coordination and the clustering of interventions geographically in high-priority landscapes

Report 4: Technical review report

Technical Review

- Combined with final evaluation of Inter-American Development Bank Multilateral Investment Fund project

- Third-party

Request for proposals

- Mexican members of UNFCCC Roster of Experts

- GHG validation and verification bodies accredited by Entidad Mexicana de Acreditación (EMA)

- U.S. verification bodies

Request for proposals

- Other organizations with GHG quantification and sector expertise

Technical review

- Selected EcoAgriculture Partners
- Desk review of assessment reports
- Field visit (meetings with implementing partners and other stakeholders)

Technical reviewer in meeting with staff of Secretariat of Environment and Natural Resources, National Institute of Ecology and Climate Change, National Forestry Commission, Secretariat of Agriculture and Rural Development and UNDP Mexico

Key technical review conclusions

- The assessments followed and are consistent with the key recommendations of the ICAT guidance documents

- Impact estimations are conservative.

Recommendations

- Risk evaluation should be more widely discussed in next evaluation.

- The next assessment should include more detailed financial feasibility analysis which should take into account socioeconomic context in all the areas in which the NAMA operates.

Recommendations

- Use a landscape regeneration framing for the NAMA.
- Clustering interventions geographically in high-priority landscapes in each state could generate significant synergies (co-benefits) with programs for watershed health, biodiversity, food security, forest landscape restoration, territorial development and other sustainable development goals, contributing further to transformation.

Recommendations

- Use and generate local factors in ex-ante analyses and planning, rather than national factors, including utilizing geographic information systems and new remote sensing methods to track changes at scale in biomass across land uses in the landscapes, along with field monitoring systems.

END